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POWERLINE MONITORING SYSTEM USING IOT - A REVIEW

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ABSTRACT

Current system of power line monitoring system does not deal with forecast and counteractive action of power cut. As a customer we will not know the reason behind power supply fail and even though we know that power supply fails or there is a problem in power supply we cannot prevent from happening. Due to natural calamities like thundering or human interruption or any other problem. If there is a problem in the line, we don't know for what reason power line has been damaged. Common man doesn't have any idea of what is happening or how to prevent it. In worst case if there is no intimation from the people the problem doesn't reach the powerline monitoring system station at all. Many technologies are there to measure and monitor the power line but we here using modern method to control and monitor the power line remotely. The power line holding poles are made of insulator, and these are the basics support structures of power grid. The Isolated Node selection unit keeps on checking the poles by switching the Trans-receivers. Parallelly the short circuit and voltage/current monitor unit keeps on checking the switching power line poles, if Network. The application displays the status of the power line. Any variation found on the respective pole the unit will send a signal to Microcontroller unit. The Microcontroller analyses the data and display the current scenario on the display unit, the display unit displays the status of the poles on the LCD display for quick analyzation. By the same time of displaying the status on an LCD the Microcontroller will send a AT commands to WIFI module for sending the data to cloud data storage for remote data analysis on a website. The application uses the HTTP protocol over the network or via a local area to store and retrieve data from files is an API and Internet of things application.

KEYWORDS: IOT, Wireless Sensor Network, Arduiuno, PCL & Sensors

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A REVIEW

1. INTRODUCTION

IOT a network that comprise of spread of sensitivity enabled applications like RFID like frequency identification (RFID), infrared sensors, Wireless sensor Networks (WSN), global positioning system &optical maser scanners optical scanner, therefore has the ability to connect with the physical world. With support of telecommunication networks and net, the information extraction is done by the IOT that uses the computing features and system software. With IOT human to machine and machine to machine exchange of data and uninterrupted fine knowledge flows, this is achieved by managing the time and gives support to the physical world in taking logical decisions.

The area unit exploitation this technology to attain the most object of a project i.e. the power line monitoring system in which we are able to remotely sense the changes occurred within the line because of natural calamities, power fluctuations, short circuit etc.

2. BACKGROUND

Quing Wang, Yonghua Lin, et al, ***A hybrid wireless system for power line monitoring***, the paper gives an approach to the system application that is based on the WIMAX and WIFI features, that is used for power line monitoring systems to increase wireless access. With the help of the results required by the simulation, it is seen that the performance of RER is degraded while it shares spectrum with others. Digital transmission was one of the means of communication for the power line monitoring system. Due to the disadvantages in digital and optical transmission they chose wireless transmission which included WIFI and WIMAX. Wireless transmission had distant advantages like maintenance, security and scalability. WIFI is used to transmit the sensed data in short range and WIMAX to transmit the sensed data to long range. They used 3G and 4G technologies to transmit the data. The proposed system says, the distance between the 2 sub stations is nearly 200km and a base station is set at all the substations, so that every base station covers the radius of 100km.

The Transmission Line Temperature On-line Monitoring System Based on Zigbee, this paper shows that sensors that are built on the transmission line such that it reads the temperature change that occur in the real time world. This allows the base to analyze the dynamic increase in the capacity of transmission lines. From the result it is seen that reliable communication happens within 200 mts of distance. On-Line Transmission is a temperature monitor system that consists of set of single base stations which include a wireless transceiver module and a micro-controller display unit, alarm unit, power modules and interface unit. Most of the commands are operated from the base stations, in return it will send those commands in Zigbee protocol that has point-to-point protocol and realizes management of multi nodes. RS232 is used to connect the RS with the computer. The hardware and software requirements are real time data and less power consumption. From the results, it's known that for more than 200mts reliable communication takes place. Also, this has resolved the problem of outdoor environment conditions of reduced supply of power. It gives us an effective base for future scope on research of dynamic increase in capacity of Transmission lines.

Power Quality Monitoring System Using Power Line Communication This paper uses an approach on monitoring the PQ variation in a continuous manner with the help of PCL. From the experiments performed it is proved that PQ can be monitored from a remote place with the help of PCL. Without any interruption of new lines, it sends and receives the PQ information in a LAN network. The interruptions such as change in the Voltage and harmonic distortion causes malfunction in the equipment and increase the cost of production. So, they monitor all this power quality information at different remote places using LAN communication. Disadvantage: Powerline communication itself is a basic problem here if any wire is broken, the communication through Power lines won't takes place and the whole system is dead.

Advantage in our project: In our project every sensors and node units assure exact power quality information and detects if any problem occurs like short circuit etc. and sends the data without any disturbance.**[4]Xi chen, Limin sun, Hongsong Zhu**, ***Application of Internet of Things in Power-lines Monitoring,*** in this paper a SG-IOT 3-layer architecture model is proposed. The effect of the natural disaster and the damage caused can be massively reduced by sending warning and by monitoring on a real time scale in case of disaster occurrence. With IOT human to machine and machine to machine exchange of data and uninterrupted fine knowledge flows. Electric power lines can be seen as the arteries of the modernized energy system where it has to be reliable, stable and efficient, as it can affect the nations economical and political constraints in everyday life. The power line transmits high voltage that cross desserts, mountains and seas by

transmitting a huge amount of electrical energy between both the regions and the sub-regions. More than the distribution equipment the transmission equipment's fail and cause power outages. The transmission halt affects more customers and leads much expensive outage costs. Due to this, it has gained a lot of attention on the transmission's reliability and stability. The overhead power lines are prone to be vulnerable to extreme weather conditions. Overhead high voltage transmission has common pitfalls such as wind deviation and wind vibrations. The conductor galloping that is caused due to strong winds lasted for several hours and brought great damage to the lines whereas the rainy and snowy weather causes frozen lines and also leaning of transmission lines will be caused due to the asymmetric pull which is a threat to the lines. The SG-IOT can be divided into three layers, first, the perception layer, second, the network layer and third, the application layer: the perception layer, the network layer and the application layer. The first layer consists of various kinds of sensors, multi-dimension code tags and readers, RFID tags and readers, cameras, WSN, GPS terminals, wired sensor networks, machine-to-machine (M2M) terminals, sensor gateways. The second layer is composed of the core networks and the telecommunication network. The third layer consists of the terminal units and infrastructure/middleware applications. Thus, this paper has complex task and is expensive too.

3. METHODOLOGIES REVIEWED

- Monitoring the PQ variation in a continuous manner with the help of PCL. From the experiments performed it is proved that PQ can be monitored from a remote place with the help of PCL.
- A SG-IOT 3-layer architecture model is proposed. The effect of the natural disaster and the damage caused can be massively reduced by sending warning and by monitoring on a real time scale in case of disaster occurrence.
- The sensors that are built on the transmission line such that it reads the temperature change that occur in the real time world. This allows the base to analyze the dynamic increase in the capacity of transmission lines. From the result it is seen that reliable communication happens within 200 mts of distance.
- This paper provides an advance method of broadcasting the data through WIFI and WIMAX. But they created many station and substation to store their data. But there is no guarantee that the data would be secured by hackers by. But in our project, we provide a secure method to transmit our data

4. CONCULSIONS

The issues of Power Variation can be resolved using Smart-Grid. Since, lots of power is consumed due to natural calamities and results is in energy wastage. This increases the growing energy demand for more reliability and security within the traditional power system. The technology of IOT can provide a place anytime and anywhere. Sensor devices or the IOT devices will be provided to SG for observing and analyzing, and it dominates the grid. Additionally, the property automates the grid and pursues such devices. From this we realize that IOT with SG will improve and support network features of a facility at a large scale. Our project is a survey related to IOT aided SG systems. Also, we tend to vary the IOT and non IOT communication applications for SG systems by providing the benefits, relevance and the disadvantages. The survey provides a base for future scope analysis in this area. Since, a large amount of information is generated by IOT-SG systems, therefore, it provides solutions and processes huge amount of information in the IOT SG system. The survey is completed by providing real time problems, challenges and analysis on the direction for IOT aided systems.

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